AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of promoting the rate of BFU-E or CFU-GM hematopoietic cell multiplication, comprising administering an effective amount of a CXCR4 antagonist to BFU-E or CFU-GM hematopoietic cells, wherein the CXCR4 antagonist comprises SDF-1[P2G] (SEQ ID NO: 1) or a fragment or an amino acid analog thereof having at least 50% identity to SDF-1[P2G] (SEQ ID NO: 1) or a fragment thereof, or comprises 3-hydroxy-2-napthoic acid.

2. (Canceled)

3. (Currently Amended) A method of increasing the circulation of BFU-E or CFU-GM hematopoietic cells in a patient in need of such treatment, comprising administering to the patient an effective amount of a CXCR4 antagonist to mobilize the BFU-E or CFU-GM hematopoietic cells from a marrow locus to a peripheral blood locus, wherein the CXCR4 antagonist comprises SDF-1[P2G] (SEQ ID NO: 1) or a fragment or an amino acid analog thereof having at least 50% identity to SDF-1[P2G] (SEQ ID NO: 1) or a fragment thereof, or comprises 3-hydroxy-2-napthoic acid.

4. (Currently Amended) The method of claim 1, further comprising introducing a heterologous nucleic acid sequence encoding SDF-1[P2G] (SEQ ID NO: 1) or a fragment or an amino acid analog thereof having at least 50% identity to SDF-1[P2G] (SEQ ID NO: 1) or a fragment thereof into the BFU-E or CFU-GM hematopoietic cells for gene therapy for promoting the rate of hematopoietic cell multiplication.

5. (Withdrawn) The method of claim 1, wherein the hematopoietic cells are ex vivo.

6. (Original) The method of claim 1, wherein the hematopoietic cells are in vivo.

7. (Canceled)

8. (Currently Amended) The method of claim 1, wherein the CXCR4 antagonist amino acid analog having at least 50% identity to SDF-1[P2G] (SEQ ID NO: 1) or a fragment thereof comprises a ~~CXCR4 antagonist peptide~~ substitution wherein the substituent is selected from the group consisting of proline, proline-amino acid chimera, and Bicyclic Turned Dipeptide.

9. (Currently Amended) The method of claim 8, wherein the CXCR4 antagonist ~~peptide~~ amino acid analog having at least 50% identity to SDF-1[P2G] (SEQ ID NO: 1) or a fragment thereof is selected from the group consisting of:

~~KGVSLSYRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVC IDPKLKWIQEYLEKALN (SEQ ID No. 1);~~

KGVSPSYRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVCI DPKLKWIQEYLEKALN (SEQ ID No. 2);

KGVSLPYRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVC IDPKLKWIQEYLEKALN (SEQ ID No. 3);

KGVSLSPRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVCI DPKLKWIQEYLEKALN (SEQ ID No. 4);

KGVSLSYPCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVCI DPKLKWIQEYLEKALN (SEQ ID No. 5);

KGVS**P***SYRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQV CIDPKLKWIQEYLEKALN (SEQ ID No. 6);

KGVSL**P***YRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQV CIDPKLKWIQEYLEKALN (SEQ ID No. 7);

KGVSLS**P***RCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQV CIDPKLKWIQEYLEKALN (SEQ ID No. 8);

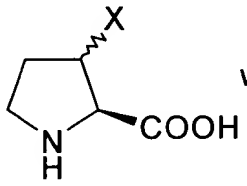
KGVSLSY**P***CPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQV CIDPKLKWIQEYLEKALN (SEQ ID No. 9);

KGVS**Btd**YRCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQV CIDPKLKWIQEYLEKALN (SEQ ID No. 10);

KGVSL**Btd**RCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVC IDPKLKWIQEYLEKALN (SEQ ID No. 11);

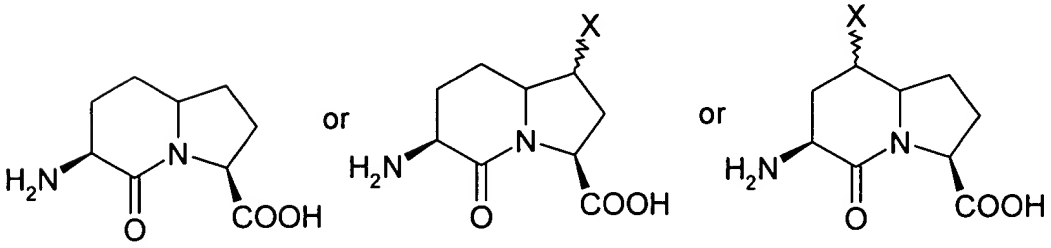
KGVSLSBtdCPCRFFESHVARANVKHLKILNTPNCALQIVARLKNNNRQVC IDPKLKWIQEYLEKALN (SEQ ID No. 12);

wherein P* =



with X= Ar, Ar-OH, alkyl and more

and Btd =



X= Alkyl, Ar, Ar-OH and more

10. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:

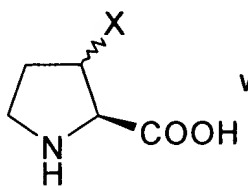
a) KGVSLSYRCPCRFFESH

b) KGVSLSYRC

11. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:

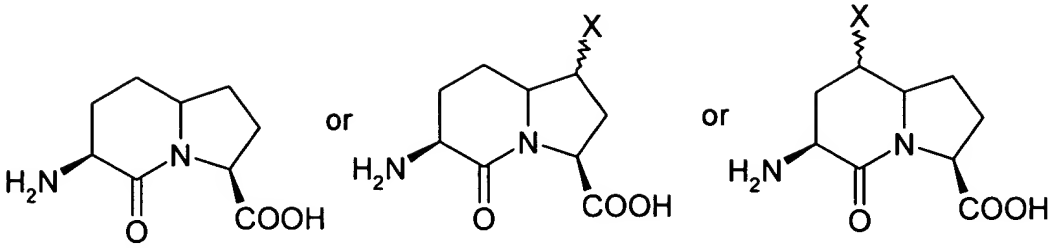
KGVS**P**SYRCPCRFFESH	(SEQ ID No. 17)
KGVSL**P**YRCPCRFFESH	(SEQ ID No. 18)
KGVSLS**P**RCPCRFFESH	(SEQ ID No. 19)
KGVSLSY**P**CPCRFFESH	(SEQ ID No. 20)
KGVS**P***SYRCPCRFFESH	(SEQ ID No. 21)
KGVSL**P***YRCPCRFFESH	(SEQ ID No. 22)
KGVSLS**P***RCPCRFFESH	(SEQ ID No. 23)
KGVSLSY**P***CPCRFFESH	(SEQ ID No. 24)
KGVS**Btd**YRCPCRFFESH	(SEQ ID No. 25)
KGVSL**Btd**RCPCRFFESH	(SEQ ID No. 26)
KGVSLSBtdCPCRFFESH	(SEQ ID No. 27)
KGVS**P**SYRC	(SEQ ID No. 28)
KGVSL**P**YRC	(SEQ ID No. 29)
KGVSLS**P**RC	(SEQ ID No. 30)
KGVSLSY**P**C	(SEQ ID No. 31)
KGVS**P***SYRC	(SEQ ID No. 32)
KGVSL**P***YRC	(SEQ ID No. 33)
KGVSLS**P***RC	(SEQ ID No. 34)
KGVSLSY**P***C	(SEQ ID No. 35)
KGVS**Btd**YRC	(SEQ ID No. 36)
KGVSL**Btd**RC	(SEQ ID No. 37)
KGVSLS**Btd**C	(SEQ ID No. 38)

wherein P* =



with X= Ar, Ar-OH, alkyl and more

and Btd =



X= Alkyl, Ar, Ar-OH and more

12. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:

KGVS**P**SYRC
|
KGVS**P**SYRC

KGVSL**P**YRC
|
KGVSL**P**YRC

KGVSLS**P**RC
|
KGVSLS**P**RC

KGVSLSY**P**C
|
KGVSLSY**P**C

KGVS**P***SYRC
|
KGVS**P***SYRC

KGVSL**P***YRC
|
KGVSL**P***YRC

KGVSLS**P***RC
|
KGVSLS**P***RC

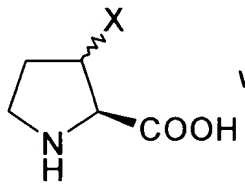
KGVSLSY**P***C
|
KGVSLSY**P***C

KGVS**Btd**YRC
|
KGVS**Btd**YRC

KGVSL**Btd**RC
|
KGVSL**Btd**RC

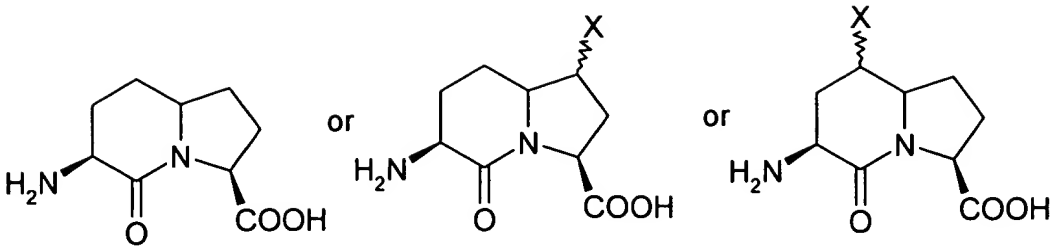
KGVSLS**Btd**C
|
KGVSLS**Btd**C

wherein P* =



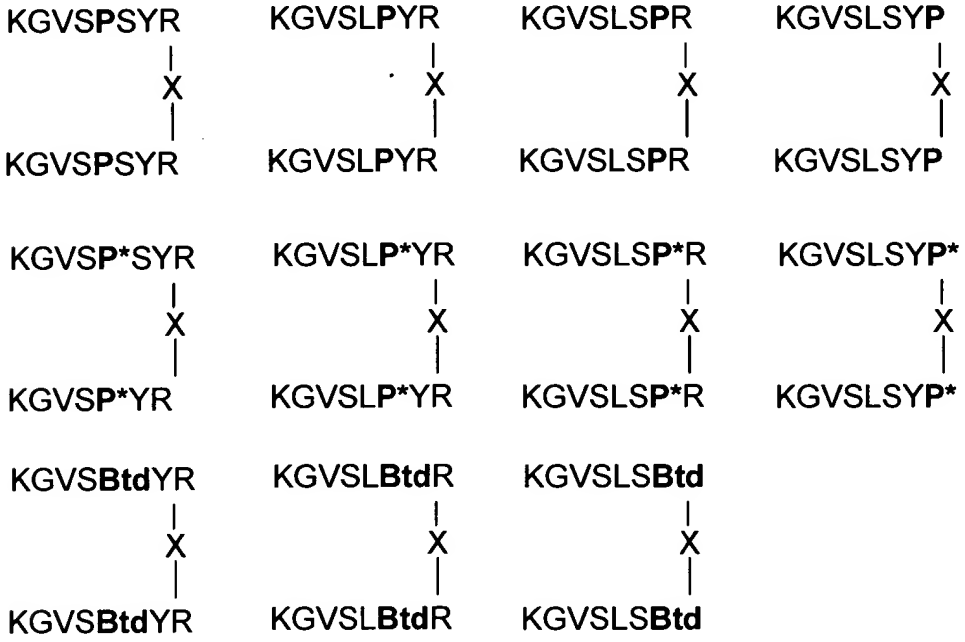
with X= Ar, Ar-OH, alkyl and more

and Btd =



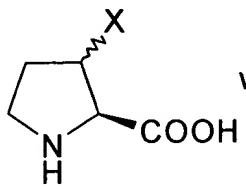
X= Alkyl, Ar, Ar-OH and more

13. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:



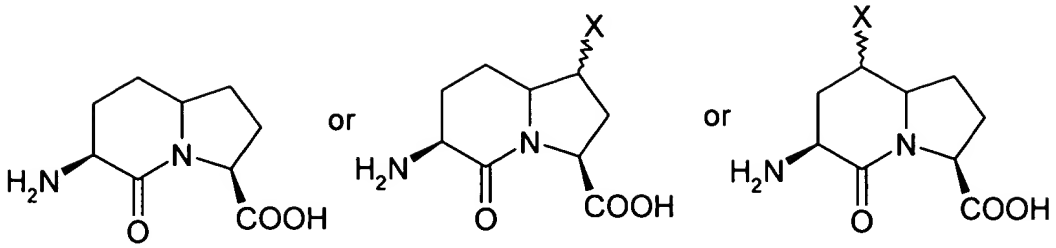
wherein X is a natural or unnatural amino acid linker between each of the arginines at position 8 in each sequencel; and,

wherein P* =



with X= Ar, Ar-OH, alkyl and more

and Btd =



X= Alkyl, Ar, Ar-OH and more

14. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:
KGVSLSYRCPCRFF-G_n-LKWIQEYLEKALN (SEQ No. 63)
KGVSLSYRCPCRFFESH-G_n-LKWIQEYLEKALN (SEQ No. 64)

wherein n is 0 or an integer from 1 to 10.

15. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:
KGVSLSYRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN (SEQ No. 65)
KGVSLSYRCPCRFFESH-$(CH_2)_n$-LKWIQEYLEKALN (SEQ No. 66)

where n is 0 or an integer from 1 to 20.

16. (Withdrawn)The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:
KGVS**P**SYRCPCRFF-GGGG-LKWIQEYLEKALN; KGVSL**P**YRCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLS**P**RCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLSY**P**CPCRFF-GGGG-LKWIQEYLEKALN; KGVS**P**SYRCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSL**P**YRCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLS**P**RCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLSY**P**CPCRFFESH-GGGG-LKWIQEYLEKALN; KGVS**P**SYRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSL**P**YRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLS**P**RCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN;

KGVSLSYPCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSPSYRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLPYRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSPRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSYPCPCRFFESH- $(CH_2)_n$ –LKWIQEYLEKALN,

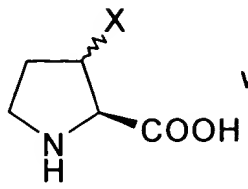
wherein n is 0 or an integer from 1 to 20.

17. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:
KGVSP*SYRCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLP*YRCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLSP*RCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLSYP*CPCRFF-GGGG-LKWIQEYLEKALN; KGVSP*SYRCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLP*YRCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLSP*RCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLSYP*CPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSP*SYRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLP*YRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSP*RCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSYP*CPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSP*SYRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLP*YRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSP*RCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSYP*CPCRFFESH- $(CH_2)_n$ –LKWIQEYLEKALN;

KGVSBtdYRCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLBtdRCPCRFF-GGGG-LKWIQEYLEKALN; KGVSLSBtdCPCRFF-GGGG-LKWIQEYLEKALN; KGVSBtdYRCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLBtdRCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSLSBtdCPCRFFESH-GGGG-LKWIQEYLEKALN; KGVSBtdYRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLBtdRCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSBtdCPCRFF-$(CH_2)_n$–LKWIQEYLEKALN; KGVSBtdYRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLBtdRCPCRFFESH-$(CH_2)_n$–LKWIQEYLEKALN; KGVSLSBtdCPCRFFESH- $(CH_2)_n$ –LKWIQEYLEKALN,

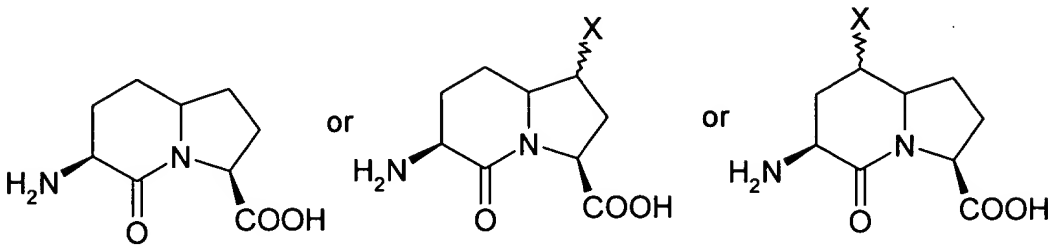
wherein n is 0 or an integer from 1 to 20 and

wherein P* =



with X= Ar, Ar-OH, alkyl and more

and Btd =



X= Alkyl, Ar, Ar-OH and more

18. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:

KGVSLSYRCPCRFFGGGGLKWIQEYLEKALN

KGVSLSYRCPCRFFESHGGGGLKWIQEYLEKALN

KGVSLSYRCPCRFFGGGGLKWIQEYLEKALN

KGVSLSYRCPCRFFESHGGGGLKWIQEYLEKALN

19. (Withdrawn) A CXCR4 antagonist peptide selected from the group consisting of:

KGVSLSYRCPCRFFGGGGLKWIQEYLEKALN

KGVSLSYRCPCRFFESHGGGGLKWIQEYLEKALN

KGVSLSYRCPCRFFGGGGLKWIQEYLEKALN

KGVSLSYRCPCRFFESHGGGGLKWIQEYLEKALN

20. (Withdrawn) The method of claim 8, wherein the CXCR4 antagonist peptide is selected from the group consisting of:
KGVSLSYRCPCRFFGGGGSKPGVIFLTKRSRQV;
KGVSLSYRCPCRFF$(CH_2)_n$ SKPGVIFLTKRSRQV;
KGVSLSYRCPCRFFGGGGEEWVQKYVDDLELSA;
KGVSLSYRCPCRFF$(CH_2)_n$ EEWVQKYVDDLELSA,

where n is 0 or an integer between 1 and 20.

21. (Currently Amended) A method of treating a cancer in a patient in need of such treatment comprising administering an effective amount of a CXCR4 antagonist to the patient to promote the rate of hematopoietic cell multiplication, wherein the CXCR4 antagonist comprises SDF-1[P2G] (SEQ ID NO: 1) or a fragment or an amino acid analog thereof having at least 50% identity to SDF-1[P2G] (SEQ ID NO: 1) or a fragment thereof, or comprises 3-hydroxy-2-napthoic acid, and wherein the administering comprises treatment of the cancer.

22. (Canceled)